



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,669	12/08/2003	Dirk D. Brown	EPC-P107	6370
28970	7590	05/23/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN LLP			HAMMOND, BRIGGITTE R	
1650 TYSONS BOULEVARD			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	

2833

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No. 10/731,669	Applicant(s) BROWN ET AL.	
	Examiner Brigitte R. Hammond	Art Unit 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52-81 is/are pending in the application.
- 4a) Of the above claim(s) 63-67, 69-72, 75, 77 and 79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 52-62, 68, 73, 74, 76 and 81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/14/05, 5/14/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's election of Figure 9H is acknowledged.

Claims 52-81 have been elected by the applicant to coincide with Figure 9H. However, claims 63-67, 69-72 (figs. 13+), 75, 77, 79 are not directed to Figure 9H, thus they are withdrawn from further consideration by the examiner, as being drawn to a non-elected invention 37 CFR 1.142(b). Accordingly, claims 63-67, 69-72, 75-77, 79 have not been further treated on the merits.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "plane of contact being tangent" (claim 60) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

Art Unit: 2833

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 53,59 and 60, are objected to because of the following informalities:

Regarding claim 53, the phrase "less than about" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Appropriate correction is required.

Regarding claims 59 and 60, since the solder balls were not positively recited, the pitch of the balls and the tangent of the balls were given little patentable weight.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 52,54-62,68,73, 74,76 and 81 are rejected under 35 U.S.C. 102(b) as being anticipated by Dozier et al. 5,772,451. Regarding claim 52, Dozier et al. disclose a connector for electrically connecting to pads formed on a semiconductor device, comprising: a substrate 310; a plurality of electrically conductive contact elements 320 formed on the substrate, said contact elements projecting away from the substrate; and

an electrical circuit formed on or within the substrate, the electrical circuit being electrically connected to at least one of the plurality of contact elements.

Regarding claim 74, Dozier et al. disclose a connector comprising: a substrate 310; a plurality of electrically conductive contact elements 320 formed on the substrate, said contact elements projecting away from the substrate; and an electrical circuit formed on or within the substrate, the electrical circuit being electrically connected to at least one of the plurality of contact elements.

Regarding claim 54, the contact elements have curvature.

Regarding claim 55, the contact elements have a wiping surface that is up to approximately 50% of a second surface to which it is wiped (see fig. 3 and col. 25 lines 5-15).

Regarding claim 56, the contact elements (tips) are in vertical alignment with respective pads of the semiconductor device.

Regarding claim 57, the contact elements are coated with a conductive material.

Regarding claims 58 and 78, the contact elements of claim are made from a copper alloy (col. 14, lines 15-16).

Regarding claims 59 and 60, the connector connects to solder balls 314.

Regarding claim 61, the contact elements have two curved portions.

Regarding claim 62, the contact elements have different mechanical properties (elastic and plastic).

Regarding claim 68, the contact and the circuit are made from the same material.

Regarding claims 73 and 81, the circuit further comprising a capacitor (col. 16, lines 65-67).

Regarding claim 76, a base portion and an extending portion are contiguous and made from same the conductive material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Applicant's Admitted Prior Art (AAPA). Dozier et al. disclose the invention substantially as claimed except for the contact elements being separated by a pitch of less than 250 microns. However, applicant discloses in paragraph 0007 that contact elements being separated by a pitch of less than 250 microns are well known in the art. It would have been obvious to one of ordinary skill to modify the connector of Dozier et al. by providing the contact elements with a pitch of less than 250 microns to accommodate semiconductor packages of that size as taught by AAPA.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brigitte R. Hammond whose telephone number is 571-

272-2006. The examiner can normally be reached on Mon.-Thurs. and Alternate Fridays from 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571-272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brigitte R. Hammond
Primary Examiner
Art Unit 2833

May 16, 2005